

NAME: \_\_\_\_\_

ELLIS

## Simple Measurement: Mass

Mass is how much matter is in an object. Another way of saying it, mass is how much matter an object has. Many people get mass confused with weight, but these terms are not interchangeable. The difference between the two is that weight accounts not only for how much matter an objects made up of but also for the pull of gravity on an object.

There are many different ways to measure mass. In class students will look at two ways to measure mass using: a triple beam balance and a spring scale.

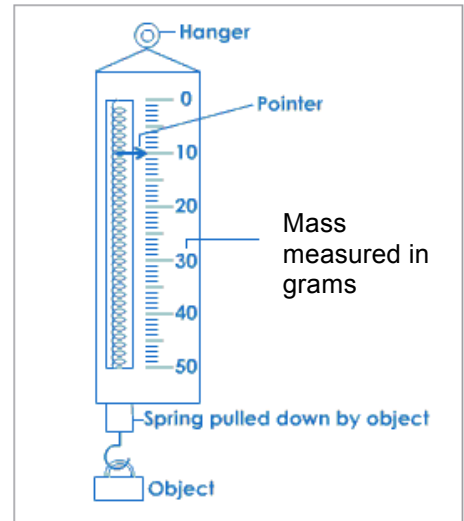
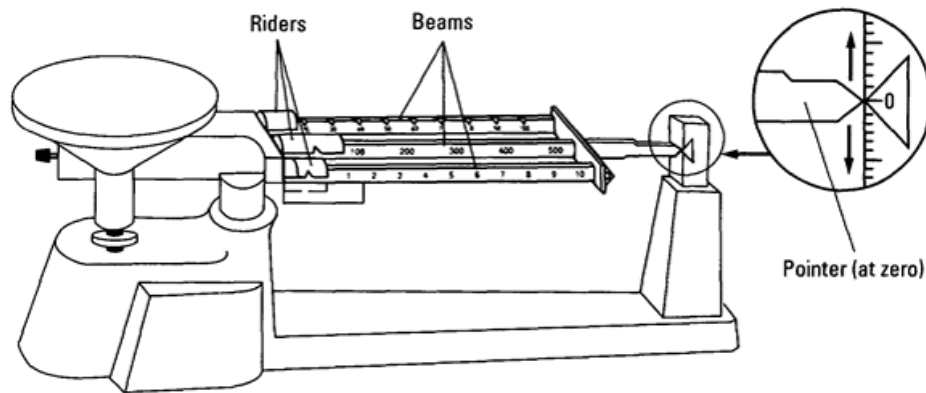


Figure 2

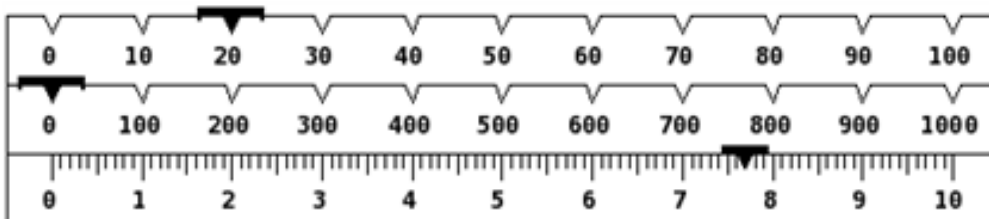
### Triple Beam Balance:

An accurate mass can be taken by reading the numbers that the mass blocks are pointing to when they are moved in such a way that the pointer is fixed at zero.

### Spring Scale:

An accurate mass can be taken by reading the number the pointer is pointing at.

To take a good measurement when using a measuring tool, scientists must estimate one digit past what is marked on the measuring device. A good measurement must also include units. Today we will be measuring our masses in grams (g). Here is an example of how to take a measurement with a digit of estimation on a triple beam balance assuming the pointer is pointing to zero:



The object on the triple beam balance would have a mass of 27.70 g. Notice that the scale does not go to the hundredths place. It appears that the pointer is exactly on the mark so the digit that we estimate is zero. If the pointer was right in between two marks (27.7 and 27.8) that digit of estimation would be 5, and so on.

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**At the following stations take an accurate measurement of the object provided. Be sure to include units and the digit of estimation, to assure that you have included the digit of estimation underline it so that it is clearly identified.**

**Station 1 Triple Beam Balance:**

**Object** \_\_\_\_\_

**Mass** \_\_\_\_\_

**Station 2 Spring Scale (be sure to read the measurement in grams):**

**Object** \_\_\_\_\_

**Mass** \_\_\_\_\_

**Now, what if you were asked how massive these objects were in milligrams? How about kilograms? How could you convert from the initial unit grams to the desired units?**

**The answer lies in understanding the metric system and also being able to use a method called dimensional analysis.**